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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/800,073	03/11/2004	Douglas M. Baney	10021233-1	8089

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AGILENT TECHNOLOGIES, INC.
Legal Department, DL429
Intellectual Property Administration
P.O. Box 7599
Loveland, CO 80537-0599

EXAMINER

PHAN, HANH

ART UNIT	PAPER NUMBER
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2613

MAIL DATE	DELIVERY MODE
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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/800,073

Applicant(s)

BANEY ET AL.

Examiner

Hanh Phan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the feature “a **photodetector**” specified in the claims 14 and the feature “**an optical IF amplifier**” specified in the claim 15 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 14 and 15 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

-In Claim 14, the phrase "said first conversion unit comprises a photodetector" was not described in the specification.

-In Claim 15, the phrase "said first conversion unit comprises an optical IF amplifier" was not described in the specification.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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5. Claims 1-10, 12, 21-24, and 26-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Olshansky et al (US Patent No. 5,134,509) in view of Taylor (Pub. No.: US 2004/0114939 A1).

Regarding claims 1, 5, 6, 21, 22, 26 and 27, referring to Figure 4, Olshansky et al teaches a system for superheterodyne detection comprising:

a first conversion unit (i.e., fiber coupler 28, LO laser 52 and photodetector 30 and amplifier 32, Fig. 4) for performing a first heterodyne operation on an optical input signal to generate an electrical IF signal (i.e., col. 8, lines 14-54); and

a second conversion unit (i.e., mixer 54 and electrical local oscillator VCO 56, Fig. 4) electrically coupled to the first conversion unit for performing a second heterodyne operation to generate an electrical output signal (i.e., col. 8, lines 14-54).

Olshansky et al differs from claims 1, 5, 6, 21, 22, 26 and 27 in that he fails to teach a signal processor for signal processing. Taylor, from the same field of endeavor likewise teaches a system for superheterodyne detection (Figure 6). Taylor further teaches a signal processor for signal processing (i.e., Fig. 6, page 10, paragraphs [0107]-[0111]). Based on this teaching, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the signal processor for signal processing as taught by Taylor in the system of Olshansky et al. One of ordinary skill in the art would have been motivated to do this since allowing correcting the transmission impairments.

Regarding claim 2, Olshansky further teaches the first conversion unit comprises:

a local oscillator (i.e., LO laser 52, Fig. 4) for generating a swept optical local oscillator signal;

a coupler (i.e., fiber coupler 28, Fig. 4) for coupling the optical input signal and the swept local oscillator signal; and

a photodetector (i.e., photodetector 30, Fig. 4, col. 8, lines 14-54).

Regarding claims 3 and 24, Olshansky further teaches the first conversion unit comprises: an IF amplifier (i.e., amplifier 32, Fig. 1) and an IF filter (i.e., filter 34, Fig. 1).

Regarding claims 4 and 23, the combination of Olshansky and Taylor teaches the second conversion unit comprises: an electrical local oscillator for generating a fixed electrical local oscillator signal; and a mixer coupled to the electrical local oscillator for performing a second heterodyne operation when mixing said electrical IF signal and said fixed electrical local oscillator signal to generate an electrical output signal suitable for signal processing (i.e., Fig. 4 of Olshansky et al and Fig. 6 of Taylor).

Regarding claims 7 and 30, the combination of Olshansky and Taylor teaches the first conversion unit reduces the effect of intensity noise (i.e., Figs. 1 and 4 of Olshansky et al and Fig. 6 of Taylor).

Regarding claim 8, the combination of Olshansky and Taylor teaches the first conversion unit separates an image in the electrical IF signal to improve amplitude accuracy of the optical input signal (i.e., Fig. 4 of Olshansky et al and Fig. 6 of Taylor).

Regarding claims 9 and 28, the combination of Olshansky and Taylor teaches the first conversion unit produces a non-zero electrical IF signal (i.e., Fig. 4 of Olshansky et al and Fig. 6 of Taylor).

Regarding claims 10 and 29, the combination of Olshansky and Taylor teaches the second conversion unit comprises a microwave image rejection mixer (i.e., Fig. 4 of Olshansky et al and Fig. 6 of Taylor).

Regarding claim 12, Olshansky et al further teaches the second conversion unit downconverts the electrical IF signal to the electrical output signal (i.e., Fig. 4 of Olshansky et al).

Regarding claim 31, referring to Figure 4, Olshansky et al teaches a system for superheterodyne detection comprising:

a first conversion unit (i.e., fiber coupler 28, LO laser 52 and photodetector 30 and amplifier 32, Fig. 4) for performing a first heterodyne operation on an optical input signal to generate an electrical IF signal (i.e., col. 8, lines 14-54); and

a second conversion unit (i.e., mixer 54 and electrical local oscillator VCO 56, Fig. 4) electrically coupled to the first conversion unit for performing a second heterodyne operation to generate an electrical output signal (i.e., col. 8, lines 14-54).

Olshansky et al differs from claim 31 in that fails to teach a signal processor for signal processing and a balanced detection unit for canceling intensity noise . Taylor, from the same field of endeavor likewise teaches a system for superheterodyne detection (Figure 6). Taylor further teaches a signal processor for signal processing and a balanced detection unit for canceling intensity noise (i.e., Fig. 6, page 10, paragraphs [0107]-[0111]). Based on this teaching, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the signal processor for signal processing and balanced detection unit for canceling intensity noise as taught by Taylor

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in the system of Olshansky et al. One of ordinary skill in the art would have been motivated to do this since allowing correcting the transmission impairments and reducing the noise signal.

6. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Olshansky et al (US Patent No. 5,134,509) in view of Taylor (Pub. No.: US 2004/0114939 A1) and further in view of Graves et al (US Patent No. 3,975,628).

Regarding claim 11, Olshansky et al as modified by Taylor teaches all the aspects of the claimed invention excepts fails to specifically teach the second conversion unit comprises a band pass filter coupled to the first conversion unit, wherein the band pass filter is offset from an electrical local oscillator in the second conversion unit to further reduce an image. Graves et al, from the same field of endeavor likewise teaches optical heterodyne receiver (Figure 4). Graves et al further teaches the second conversion unit comprises a band pass filter coupled to the first conversion unit, wherein the band pass filter is offset from an electrical local oscillator in the second conversion unit to further reduce an image (i.e., Fig. 4, col. 6, lines 14-54). Based on this teaching, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the second conversion unit comprises a band pass filter coupled to the first conversion unit, wherein the band pass filter is offset from an electrical local oscillator in the second conversion unit to further reduce an image as taught by Graves et al in the system of Olshansky et al modified by Taylor. One of ordinary skill in the art

would have been motivated to do this since allowing selecting the wanted signal and eliminating the unwanted signal and increasing the signal to noise ratio.

7. Claims 13, 14 and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mells (US Patent No. 6,850,710) in view of Taylor (Pub. No.: US 2004/0114939 A1).

Regarding claim 13, referring to Figure 7, Mells teaches a system for superheterodyne detection comprising:

a first conversion unit (i.e., single mode fiber coupler 28, DFB laser , and single mode fiber, Fig. 7) for performing a first heterodyne operation on an optical input signal to generate an optical IF signal (i.e., col. 9, lines 46-67 and col. 10, lines 1-10); and

a second conversion unit (i.e., photodetector, Fig. 7) optically coupled to the first conversion unit for performing a second heterodyne operation to convert the optical IF signal to an electrical output signal (i.e., Fig. 7, col. 9, lines 46-67 and col. 10, lines 1-10).

Mells differs from claim 13 in that fails to teach a signal processor for signal processing. Taylor, from the same field of endeavor likewise teaches a system for superheterodyne detection (Figure 6). Taylor further teaches a signal processor for signal processing (i.e., Fig. 6, page 10, paragraphs [0107]-[0111]). Based on this teaching, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the signal processor for signal processing as taught

by Taylor in the system of Mells. One of ordinary skill in the art would have been motivated to do this since allowing correcting the transmission impairments.

Regarding claim 14, Mells further teaches the first conversion unit comprises: a local oscillator (i.e., DFB laser, Fig. 7) for generating a swept optical local oscillator signal; a coupler (i.e., single mode fiber coupler, Fig. 7) for coupling said optical input signal and said swept optical local oscillator signal.

Regarding claim 16, Mells further teaches the second conversion unit comprises: a square law photodetector for performing said second heterodyne operation to generate said electrical output signal (Fig. 7).

Regarding claim 17, the combination of Mells and Taylor teaches the signal processing comprises a reconstruction of an optical spectrum of the optical input signal (i.e., Fig. 6 of Taylor, page 10, paragraphs [0107]-[0111]).

Regarding claim 18, the combination of Mells and Taylor teaches a processor for processing said electrical output signal to measure optical parameters of said optical input signal (i.e., Fig. 6 of Taylor, page 10, paragraphs [0107]-[0111]).

8. Claims 15, 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mells (US Patent No. 6,850,710) in view of Taylor (Pub. No.: US 2004/0114939 A1) and further in view of Heidemann (US Patent No. 5,631,760).

Regarding claims 15, 19 and 20, Mells as modified by Taylor teaches all the aspects of the claimed invention except fails to teach an optical IF filter. Heidemann, from the same field of endeavor likewise teaches an optical heterodyne detection

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(Figure 1). Heidemann further teaches an optical IF filter (i.e., Fig. 1, col. 2, lines 28-67 and col. 3, lines 1-64).). Based on this teaching, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the optical IF filter as taught by Heidemann in the system of Mells modified by Taylor. One of ordinary skill in the art would have been motivated to do this since allowing selecting the wanted signal and eliminating the unwanted signal and increasing the signal to noise ratio.

9. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Olshansky et al (US Patent No. 5,134,509) in view of Taylor (Pub. No.: US 2004/0114939 A1) and further in view of Tsushima et al (US Patent No. 5,305,134).

Regarding claim 25, Olshansky et al as modified by Taylor teaches all the aspects of the claimed invention excepts fails to specifically teach an optical filter placed in front of the first conversion unit. Tsushima et al, from the same field of endeavor likewise teaches optical heterodyne receiver (Figure 1). Tsushima et al further teaches an optical filter (i.e., optical filter 6, Fig. 1) placed in front of the first conversion unit (i.e., Fig. 1, col. 3, lines 46-67 and col. 4, lines 1-42). Based on this teaching, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the optical filter placed in front of the first conversion unit as taught by Tsushima et al in the system of Olshansky et al modified by Taylor. One of ordinary skill in the art would have been motivated to do this since allowing selecting the wanted signal and eliminating the unwanted signal and increasing the signal to noise ratio.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Glance (US Patent No. 4,723,317) discloses optical heterodyne detection system.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hanh Phan whose telephone number is (571)272-3035.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan, can be reached on (571)272-3022. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-4700.


HANH PHAN
PRIMARY EXAMINER